Quantum Computing in Drug Discovery Market Report and Forecast 2024-2032

Market Report | 2024-09-30 | 200 pages | EMR Inc.

AVAILABLE LICENSES:

- Single User License $4999.00
- Five User License $5999.00
- Corporate License $6999.00

Report description:

Global Quantum Computing in Drug Discovery Market Report and Forecast 2024-2032??

The global quantum computing in drug discovery market was valued at USD 400 million in 2023. The market is expected to grow at a CAGR of 13% during the period 2024-2032, reaching USD 1200 million by 2032. This growth is driven by the increasing adoption of artificial intelligence in the healthcare domain, advancements in quantum computing technology, rising investment from pharmaceutical companies, and supportive government policies and investments in healthcare research infrastructure.

Global Quantum Computing in Drug Discovery Market- Analysis

Quantum computing in drug discovery leverages quantum mechanics to solve complex molecular and chemical interactions, significantly accelerating the process of identifying and developing new drugs. This technology promises to transform drug discovery by enhancing the accuracy and efficiency of simulations and predictions, potentially reducing the time and cost involved in bringing new drugs to market. The market for quantum computing in drug discovery is growing due to advancements in quantum technology and increasing investments from pharmaceutical and technology companies.

Market Driver

Advancements in Quantum Computing Technology: Continuous innovations in quantum computing technology are a major driver for its application in drug discovery. These advancements enhance the ability to model complex biological systems and chemical reactions with unprecedented precision, speeding up the discovery process and improving the accuracy of drug development.

Increasing Investment from Pharmaceutical Companies: Pharmaceutical companies are increasingly investing in quantum computing to gain a competitive edge in drug discovery. The ability to rapidly identify and validate drug targets, generate leads,

and optimize compounds can significantly reduce the time and cost of drug development, driving market growth.

Rising Demand for Efficient Drug Discovery Processes: The growing need for more efficient and cost-effective drug discovery processes is propelling the adoption of quantum computing. This technology enables detailed simulations and accurate predictions, which can streamline various stages of drug development, from target identification to lead optimization.

Market Challenges

High Cost of Quantum Computing Systems: The high cost associated with quantum computing systems can be a significant barrier to widespread adoption. The expense of acquiring and maintaining advanced quantum hardware and software may limit accessibility, particularly for smaller pharmaceutical companies and research institutions.

Technical Complexity and Skill Requirements: Quantum computing technology is highly complex and requires specialized knowledge and skills. The scarcity of professionals trained in quantum computing and its applications in drug discovery can hinder the market's growth. Efforts to provide education and training in this field are essential.

Regulatory and Ethical Issues: The integration of quantum computing in drug discovery must navigate regulatory and ethical challenges. Ensuring compliance with existing regulations and addressing concerns related to data security and patient safety are crucial for the successful implementation of this technology.

Future Opportunities

Collaborations and Partnerships: Strategic collaborations and partnerships between quantum computing companies and pharmaceutical firms can drive innovation and market growth. Joint efforts can lead to the development of new quantum algorithms and solutions tailored to drug discovery, enhancing the capabilities of both industries.

Expansion into Emerging Markets: Expanding quantum computing applications into emerging markets presents substantial growth opportunities. As healthcare infrastructure and research capabilities improve in these regions, there is significant potential for adopting advanced technologies like quantum computing in drug discovery.

Development of Quantum Software Solutions: The development of specialized quantum software solutions for drug discovery offers significant market potential. Tailored software can enhance the efficiency and accuracy of quantum simulations and predictions, making the technology more accessible and effective for pharmaceutical research.

Global Quantum Computing in Drug Discovery Market Trends

Integration with Artificial Intelligence and Machine Learning: The integration of quantum computing with artificial intelligence (AI) and machine learning (ML) is a growing trend. AI and ML can enhance the capabilities of quantum algorithms, providing more accurate predictions and insights for drug discovery. This combination can significantly accelerate the drug development process.

Increasing Use of Quantum Simulations: The use of quantum simulations to model complex molecular structures and chemical reactions is becoming more prevalent. These simulations provide detailed insights that are not possible with classical computing, improving the accuracy of drug discovery and development processes.

Focus on Personalized Medicine: The trend toward personalized medicine is driving the adoption of quantum computing in drug discovery. Quantum computing can help develop tailored treatments by analyzing individual genetic and molecular profiles, leading to more effective and targeted therapies.

Growth in Quantum Computing Research: There is a significant increase in research focused on quantum computing applications in drug discovery. Academic institutions and research organizations are investing in exploring new quantum algorithms and techniques to solve complex biological problems, driving innovation and market growth.

Quantum Computing in Drug Discovery Market Segmentation

Market Breakup by Offering

Target Identification/ Validation

Hit Generation / Lead Identification

Lead Optimization

Others

The global quantum computing in the drug discovery market is segmented by offering target identification/validation, hit generation/lead identification, lead optimization, and others. Target identification/validation involves using quantum computing to accurately identify and validate biological targets for new drugs. Hit generation/lead identification focuses on finding potential drug candidates from large chemical libraries. Lead optimization uses quantum simulations to refine and improve the properties of drug candidates. These segments address different stages of the drug discovery process, enhancing efficiency and accuracy.

Market Breakup by Therapeutic Area

Cardiovascular Disorders

CNS Disorders

Dermatological Disorders

Endocrine Disorders

Gastrointestinal Disorders

Immunological Disorders

Infectious Diseases

Musculoskeletal Disorders

Oncological Disorders

Respiratory Disorders

Others

The market is segmented by therapeutic area into cardiovascular disorders, CNS disorders, dermatological disorders, endocrine disorders, gastrointestinal disorders, immunological disorders, infectious diseases, musculoskeletal disorders, oncological disorders, respiratory disorders, and others. Each therapeutic area leverages quantum computing to address specific health conditions, improving drug discovery and development outcomes across various medical fields.

Market Breakup by End User

Pharmaceutical Companies

Biopharmaceutical Companies

Research and Academic Institute

Others

The market is segmented by end-user into pharmaceutical companies, biopharmaceutical companies, research and academic institutes, and others. Pharmaceutical and biopharmaceutical companies use quantum computing to enhance their drug discovery pipelines and gain a competitive edge. Research and academic institutes focus on exploring new quantum algorithms and applications in drug discovery, driving innovation and knowledge in the field.

Market Breakup by Region

North America

Europe

Asia Pacific

Latin America

Middle East and Africa

The market is segmented by region into North America, Europe, Asia Pacific, Latin America, and the Middle East and Africa. North

America and Europe lead the market due to advanced research infrastructure, significant investments, and high adoption rates of quantum technologies. The Asia Pacific region is experiencing rapid growth due to increasing healthcare investments and growing interest in advanced technologies. Latin America the Middle East and Africa present emerging opportunities with improving research capabilities and healthcare infrastructure.

Global Quantum Computing in Drug Discovery Market Competitive Landscape

The global quantum computing in drug discovery market features key players such as IBM Corp., Alphabet Inc., D-Wave Systems Inc., Microsoft Corporation, Rigetti Computing Inc., Quantum Brilliance Pty Ltd, Xanadu Quantum Technologies Inc., Fujitsu Limited, Intel Corporation, Atos SE, and 1QB Information Technologies, Inc. These companies drive market growth through innovations in quantum computing, strategic partnerships, and market expansion efforts. They offer advanced quantum hardware and software solutions tailored for drug discovery, enhancing the efficiency and accuracy of research processes. Continuous research and development, coupled with collaborations between quantum computing and pharmaceutical companies, strengthen their market presence and drive innovation in the field.

Key Questions Answered in the Report

What was the estimated value of global quantum computing in the drug discovery market in 2023?

What is the expected CAGR of quantum computing in the drug discovery market from 2024 to 2032?

What factors are driving the growth of quantum computing in the drug discovery market?

What challenges does quantum computing in the drug discovery market face?

How do advancements in quantum computing technology impact drug discovery?

What opportunities exist for quantum computing in the drug discovery market in emerging regions?

How is the market segmented by offering quantum computing in the drug discovery market?

Which therapeutic areas are most addressed by quantum computing in drug discovery?

What are the primary end users of quantum computing in drug discovery solutions?

How is the market segmented by region in the quantum computing drug discovery market?

Who are some of the major players in the global quantum computing drug discovery market?

How do privacy and ethical concerns affect the adoption of quantum computing in drug discovery?

Key Benefits for Stakeholders

The industry report offers a comprehensive quantitative analysis of various market segments, historical and current market trends, market forecasts, and dynamics of the global quantum computing in drug discovery market from 2017-2032.

The research report provides the latest information on the market drivers, challenges, and opportunities in the global quantum

computing in drug discovery market.

The study maps the leading, as well as the fastest-growing, regional markets, enabling stakeholders to identify key country-level markets within each region.

Porter's five forces analysis assists stakeholders in assessing the impact of new entrants, competitive rivalry, supplier power, buyer power, and the threat of substitution. It helps stakeholders analyze the level of competition within the global quantum computing in the drug discovery industry and its attractiveness.

The competitive landscape section allows stakeholders to understand their competitive environment and provides insight into the current positions of key players in the market.

Table of Contents:

1 Preface
1.1 Objectives of the Study
1.2 Key Assumptions
1.3 Report Coverage - Key Segmentation and Scope
1.4 Research Methodology
2 Executive Summary
3 Global Quantum Computing in Drug Discovery Market Overview
3.1 Global Quantum Computing in Drug Discovery Market Historical Value (2017-2023)
3.2 Global Quantum Computing in Drug Discovery Market Forecast Value (2024-2032)
4 Vendor Positioning Analysis

4.1 Key Vendors
4.2 Prospective Leaders
4.3 Niche Leaders
4.4 Disruptors
5 Global Quantum Computing in Drug Discovery Market Landscape*
5.1 Global Quantum Computing in Drug Discovery Market: Developers Landscape
5.1.1 Analysis by Year of Establishment
5.1.2 Analysis by Company Size
5.1.3 Analysis by Region
5.2 Global Quantum Computing in Drug Discovery Market: Product Landscape
5.2.1 Analysis by Offering
5.2.2 Analysis by Therapeutic Area
6 Global Quantum Computing in Drug Discovery Market Dynamics
6.1 Market Drivers and Constraints
6.2 SWOT Analysis
6.2.1 Strengths
6.2.2 Weaknesses
6.2.3 Opportunities
6.2.4 Threats
6.3 PESTEL Analysis
6.3.1 Political
6.3.2 Economic
6.3.3 Social
6.3.4 Technological
6.3.5 Legal
6.3.6 Environment
6.4 Porter's Five Forces Model
6.4.1 Bargaining Power of Suppliers
6.4.2 Bargaining Power of Buyers
6.4.3 Threat of New Entrants
6.4.4 Threat of Substitutes
6.4.5 Degree of Rivalry
6.5 Key Demand Indicators
6.6 Key Price Indicators
6.7 Industry Events, Initiatives, and Trends
6.8 Value Chain Analysis
7 Global Quantum Computing in Drug Discovery Market Segmentation (2017-2032)
7.1 Global Quantum Computing in Drug Discovery Market (2017-2032) by Offering
7.1.1 Market Overview
7.1.2 Target Identification/ Validation
7.1.3 Hit Generation / Lead Identification
7.1.4 Lead Optimization
7.1.5 Others
7.2 Global Quantum Computing in Drug Discovery Market (2017-2032) by Therapeutic Area
7.2.1 Market Overview
7.2.2 Cardiovascular Disorders
7.2.3 CNS Disorders

7.2.4 Dermatological Disorders
7.2.5 Endocrine Disorders
7.2.6 Gastrointestinal Disorders
7.2.7 Immunological Disorders
7.2.8 Infectious Diseases
7.2.9 Musculoskeletal Disorders
7.2.10 Oncological Disorders
7.2.11 Respiratory Disorders
7.2.12 Others
7.3 Global Quantum Computing in Drug Discovery Market (2017-2032) by End User
7.3.1 Market Overview
7.3.2 Pharmaceutical Companies
7.3.3 Biopharmaceutical Companies
7.3.4 Research and Academic Institute
7.3.5 Others
7.4 Global Quantum Computing in Drug Discovery Market (2017-2032) by Region
7.4.1 Market Overview
7.4.2 North America
7.4.3 Europe
7.4.4 Asia Pacific
7.4.5 Latin America
7.4.6 Middle East and Africa
8 North America Quantum Computing in Drug Discovery Market (2017-2032)
8.1 North America Quantum Computing in Drug Discovery Market (2017-2032) by Offering
8.1.1 Market Overview
8.1.2 Target Identification/ Validation
8.1.3 Hit Generation / Lead Identification
8.1.4 Lead Optimization
8.1.5 Others
8.2 North America Quantum Computing in Drug Discovery Market (2017-2032) by Therapeutic Area
8.2.1 Market Overview
8.2.2 Cardiovascular Disorders
8.2.3 CNS Disorders
8.2.4 Dermatological Disorders
8.2.5 Endocrine Disorders
8.2.6 Gastrointestinal Disorders
8.2.7 Immunological Disorders
8.2.8 Infectious Diseases
8.2.9 Musculoskeletal Disorders
8.2.10 Oncological Disorders
8.2.11 Respiratory Disorders
8.2.12 Others
8.3 North America Quantum Computing in Drug Discovery Market (2017-2032) by End User
8.3.1 Market Overview
8.3.2 Pharmaceutical Companies
8.3.3 Biopharmaceutical Companies
8.3.4 Research and Academic Institute

8.3.5 Others
8.4 North America Quantum Computing in Drug Discovery Market (2017-2032) by Country
8.4.1 United States of America
8.4.2 Canada
9 Europe Quantum Computing in Drug Discovery Market (2017-2032)
9.1 Europe Quantum Computing in Drug Discovery Market (2017-2032) by Offering
9.1.1 Market Overview
9.1.2 Target Identification/ Validation
9.1.3 Hit Generation / Lead Identification
9.1.4 Lead Optimization
9.1.5 Others
9.2 Europe Quantum Computing in Drug Discovery Market (2017-2032) by Therapeutic Area
9.2.1 Market Overview
9.2.2 Cardiovascular Disorders
9.2.3 CNS Disorders
9.2.4 Dermatological Disorders
9.2.5 Endocrine Disorders
9.2.6 Gastrointestinal Disorders
9.2.7 Immunological Disorders
9.2.8 Infectious Diseases
9.2.9 Musculoskeletal Disorders
9.2.10 Oncological Disorders
9.2.11 Respiratory Disorders
9.2.12 Others
9.3 Europe Quantum Computing in Drug Discovery Market (2017-2032) by End User
9.3.1 Market Overview
9.3.2 Pharmaceutical Companies
9.3.3 Biopharmaceutical Companies
9.3.4 Research and Academic Institute
9.3.5 Others
9.4 Europe Quantum Computing in Drug Discovery Market (2017-2032) by Country
9.4.1 United Kingdom
9.4.2 Germany
9.4.3 France
9.4.4 Italy
9.4.5 Others
10 Asia Pacific Quantum Computing in Drug Discovery Market (2017-2032)
10.1 Asia Pacific Quantum Computing in Drug Discovery Market (2017-2032) by Offering
10.1.1 Market Overview
10.1.2 Target Identification/ Validation
10.1.3 Hit Generation / Lead Identification
10.1.4 Lead Optimization
10.1.5 Others
10.2 Asia Pacific Quantum Computing in Drug Discovery Market (2017-2032) by Therapeutic Area
10.2.1 Market Overview
10.2.2 Cardiovascular Disorders
10.2.3 CNS Disorders

10.2.4 Dermatological Disorders
10.2.5 Endocrine Disorders
10.2.6 Gastrointestinal Disorders
10.2.7 Immunological Disorders
10.2.8 Infectious Diseases
10.2.9 Musculoskeletal Disorders
10.2.10 Oncological Disorders
10.2.11 Respiratory Disorders
10.2.12 Others
10.3 Asia Pacific Quantum Computing in Drug Discovery Market (2017-2032) by End User
10.3.1 Market Overview
10.3.2 Pharmaceutical Companies
10.3.3 Biopharmaceutical Companies
10.3.4 Research and Academic Institute
10.3.5 Others
10.4 Asia Pacific Quantum Computing in Drug Discovery Market (2017-2032) by Country
10.4.1 China
10.4.2 Japan
10.4.3 India
10.4.4 ASEAN
10.4.5 Australia
10.4.6 Others
11 Latin America Quantum Computing in Drug Discovery Market (2017-2032)
11.1 Latin America Quantum Computing in Drug Discovery Market (2017-2032) by Offering
11.1.1 Market Overview
11.1.2 Target Identification/ Validation
11.1.3 Hit Generation / Lead Identification
11.1.4 Lead Optimization
11.1.5 Others
11.2 Latin America Quantum Computing in Drug Discovery Market (2017-2032) by Therapeutic Area
11.2.1 Market Overview
11.2.2 Cardiovascular Disorders
11.2.3 CNS Disorders
11.2.4 Dermatological Disorders
11.2.5 Endocrine Disorders
11.2.6 Gastrointestinal Disorders
11.2.7 Immunological Disorders
11.2.8 Infectious Diseases
11.2.9 Musculoskeletal Disorders
11.2.10 Oncological Disorders
11.2.11 Respiratory Disorders
11.2.12 Others
11.3 Latin America Quantum Computing in Drug Discovery Market (2017-2032) by End User
11.3.1 Market Overview
11.3.2 Pharmaceutical Companies
11.3.3 Biopharmaceutical Companies
11.3.4 Research and Academic Institute

11.3.5 Others
11.4 Latin America Quantum Computing in Drug Discovery Market (2017-2032) by Country
11.4.1 Brazil
11.4.2 Argentina
11.4.3 Mexico
12 Middle East and Africa Quantum Computing in Drug Discovery Market (2017-2032)
12.1 Middle East and Africa Quantum Computing in Drug Discovery Market (2017-2032) by Offering
12.1.1 Market Overview
12.1.2 Target Identification/ Validation
12.1.3 Hit Generation / Lead Identification
12.1.4 Lead Optimization
12.1.5 Others
12.2 Middle East and Africa Quantum Computing in Drug Discovery Market (2017-2032) by Therapeutic Area
12.2.1 Market Overview
12.2.2 Cardiovascular Disorders
12.2.3 CNS Disorders
12.2.4 Dermatological Disorders
12.2.5 Endocrine Disorders
12.2.6 Gastrointestinal Disorders
12.2.7 Immunological Disorders
12.2.8 Infectious Diseases
12.2.9 Musculoskeletal Disorders
12.2.10 Oncological Disorders
12.2.11 Respiratory Disorders
12.2.12 Others
12.3 Middle East and Africa Quantum Computing in Drug Discovery Market (2017-2032) by End User
12.3.1 Market Overview
12.3.2 Pharmaceutical Companies
12.3.3 Biopharmaceutical Companies
12.3.4 Research and Academic Institute
12.3.5 Others
12.4 Middle East and Africa Quantum Computing in Drug Discovery Market (2017-2032) by Country
12.4.1 Saudi Arabia
12.4.2 United Arab Emirates
12.4.3 Nigeria
12.4.4 South Africa
12.4.5 Others
13 Patent Analysis
13.1 Analysis by Type of Patent
13.2 Analysis by Publication Year
13.3 Analysis by Issuing Authority
13.4 Analysis by Patent Age
13.5 Analysis by CPC Analysis
13.6 Analysis by Patent Valuation
13.7 Analysis by Key Players
14 Grant Analysis
14.1 Analysis by Year

14.2 Analysis by Amount Awarded
14.3 Analysis by Issuing Authority
14.4 Analysis by Grant Product
14.5 Analysis by Funding Institute
14.6 Analysis by Departments
14.7 Analysis by Recipient Organization
15 Funding and Investment Analysis
15.1 Analysis by Funding Instances
15.2 Analysis by Type of Funding
15.3 Analysis by Funding Amount
15.4 Analysis by Leading Players
15.5 Analysis by Leading Investors
15.6 Analysis by Geography
16 Strategic Initiatives
16.1 Analysis by Partnership Instances
16.2 Analysis by Type of Partnership
16.3 Analysis by Leading Players
16.4 Analysis by Geography
17 Supplier Landscape
17.1 Market Share Analysis, By Region (Top 5 Companies)
17.2 IBM Corp .
17.2.1 Financial Analysis
17.2.2 Product Portfolio
17.2.3 Demographic Reach and Achievements
17.2.4 Company News and Developments
17.2.5 Certifications
17.3 Alphabet Inc
17.3.1 Financial Analysis
17.3.2 Product Portfolio
17.3.3 Demographic Reach and Achievements
17.3.4 Company News and Developments
17.3.5 Certifications
17.4 D-Wave Systems Inc .
17.4.1 Financial Analysis
17.4.2 Product Portfolio
17.4.3 Demographic Reach and Achievements
17.4.4 Company News and Developments
17.4.5 Certifications
17.5 Microsoft Corporation
17.5.1 Financial Analysis
17.5.2 Product Portfolio
17.5.3 Demographic Reach and Achievements
17.5.4 Company News and Developments
17.5.5 Certifications
17.6 Rigetti Computing Inc .
17.6.1 Financial Analysis
17.6.2 Product Portfolio

17.6.3 Demographic Reach and Achievements
17.6.4 Company News and Developments
17.6.5 Certifications
17.7 Quantum Brilliance Pty Ltd
17.7.1 Financial Analysis
17.7.2 Product Portfolio
17.7.3 Demographic Reach and Achievements
17.7.4 Company News and Developments
17.7.5 Certifications
17.8 Xanadu Quantum Technologies Inc .
17.8.1 Financial Analysis
17.8.2 Product Portfolio
17.8.3 Demographic Reach and Achievements
17.8.4 Company News and Developments
17.8.5 Certifications
17.9 Fujitsu Limited
17.9.1 Financial Analysis
17.9.2 Product Portfolio
17.9.3 Demographic Reach and Achievements
17.9.4 Company News and Developments
17.9.5 Certifications
17.10 Intel Corporation
17.10.1 Financial Analysis
17.10.2 Product Portfolio
17.10.3 Demographic Reach and Achievements
17.10.4 Company News and Developments
17.10.5 Certifications
17.11 Atos SE
17.11.1 Financial Analysis
17.11.2 Product Portfolio
17.11.3 Demographic Reach and Achievements
17.11.4 Company News and Developments
17.11.5 Certifications
17.12 1QB Information Technologies, Inc .
17.12.1 Financial Analysis
17.12.2 Product Portfolio
17.12.3 Demographic Reach and Achievements
17.12.4 Company News and Developments
17.12.5 Certifications
18 Global Quantum Computing in Drug Discovery Market - Distribution Model (Additional Insight)
18.1 Overview
18.2 Potential Distributors
18.3 Key Parameters for Distribution Partner Assessment
19 Key Opinion Leaders (KOL) Insights (Additional Insight)
*Additional insights provided are customisable as per client requirements.

* The coverage of the Market Landscape section depends on the data availability and may cover a minimum of 80% of the total

market. The EMR team strives to make this section as comprehensive as possible.

**The supplier list is not exhaustive. Moreover, we can provide analysis of companies as per custom requests.

SCOTTS INTERNATIONAL

Quantum Computing in Drug Discovery Market Report and Forecast 2024-2032

Market Report | 2024-09-30 | 200 pages | EMR Inc.

To place an Order with Scotts International:

- - Print this form
- - Complete the relevant blank fields and sign
- - Send as a scanned email to support@scotts-international.com

ORDER FORM:

Select license	License	Price
	Single User License	$4999.00
	Five User License	$5999.00
	Corporate License	$6999.00
	VAT	
	Total	

*Please circle the relevant license option. For any questions please contact support@scotts-international.com or 0048 603 394 346.

** VAT will be added at 23% for Polish based companies, individuals and EU based companies who are unable to provide a valid EU Vat Numbers.

Email*		Phone*	
First Name*		Last Name*	
Job title*			
Company Name*		EU Vat / Tax ID / NIP number*	
Address*		City*	
Zip Code*		Country*	
		Date	2025-05-05
		Signature	